WHY PURSUE TRADE LIBERALIZATION?

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Despite the net economic and social benefits of reducing most government subsidies[2] and opening economies to trade, almost every national government intervenes in markets for goods and services in ways that distort international commerce. Those distortionary policies harm most the economies imposing them, but the worst of them (in agriculture and clothing) are particularly harmful to the world's poorest people. A key challenge facing the world, and identified recently by both the Copenhagen Consensus Project (Lomborg 2004) and the UN's Millennium Goals Project (Messerlin et al. 2004), is to rid the world of such wasteful and anti-poor policies. This challenge in its modern form has been with us for about 75 years. The latter part of the nineteenth century saw a strong movement towards laissez faire, but that development was reversed following the first world war in ways that led to the Great Depression of the early 1930s and the conflict that followed (Kindleberger 1989). It was during the second world war, in 1944, that a conference at Bretton Woods proposed an International Trade Organization. An ITO charter was drawn up by 1948 along with a General Agreement on Tariffs and Trade (GATT), but the ITO idea died when the United States failed to progress it through Congress (Diebold 1952). Despite that, the GATT during its 47-year history (before it was absorbed into the World Trade Organization (WTO) on 1 January 1995) oversaw the gradual lowering of many tariffs on imports of manufactured goods by governments of developed countries. Manufacturing tariffs remained high in developing countries, however, and distortionary subsidies and trade policies affecting agricultural and services markets of both rich and poor countries continued to hamper efficient resource allocation, economic growth and poverty alleviation.

The Uruguay Round of multilateral trade negotiations led to agreements signed in 1994 that have seen some trade liberalization over the subsequent ten years. But even when those agreements were fully implemented by end-2004, and despite additional unilateral trade liberalizations since the 1980s by a number of countries (particularly developing and transition economies), many subsidies and trade distortions remain. They include not just trade taxes-cum-subsidies but also contingent protection measures such as anti-dumping, regulatory standards that can be technical barriers to trade, and domestic production subsidies (allegedly decoupled in the case of some farm support programs but in fact only partially so). Insufficient or excessive taxation or quantitative regulations in the presence of externalities such as pollution also lead to inefficiencies and can be trade distorting. Furthermore, the on-going proliferation of preferential trading and bilateral or regional integration arrangements – for which there would be little or no need in the absence of trade barriers – is adding complexity to international economic relations. In some cases those arrangements are leading to trade and investment diversion rather than creation.

The reluctance to reduce trade distortions is almost never because such policy reform involves government treasury outlays. On the contrary, except in the case of a handful of low-income countries

[1] This paper draws on Anderson (2004 and 2005a,b).
[2] Not all subsidies are welfare-reducing, and in some cases a subsidy-cum-tax will be optimal to overcome a gap between private and social costs that cannot be bridged à la Coase (1960). Throughout this paper all references to 'cutting subsidies' refer to bringing them back to their optimal level (which will be zero in all but those exceptional cases).

still heavily dependent on trade taxes for government revenue, such reform may well benefit the treasury (by raising income and/or consumption tax revenues more than trade tax revenues fall, not to mention any payments foregone because of cuts to subsidy programs). Rather, distortions remain largely because further trade liberalization and subsidy cuts redistribute jobs, income and wealth in ways that those in government fear will reduce their chances of remaining in power (and possibly their own wealth in countries where corruption is rife). The challenge involves finding politically attractive ways to phase out remaining distortions to world markets for agricultural and other goods, services, capital and potentially even labour.

This paper focuses on distortions at national borders plus trade-distorting agricultural production subsidies. While global in coverage, the paper distinguishes between policies of developed countries and those of developing (including former socialist and least-developed) countries. It is structured as follows: Section 1 summarizes the arguments for removing trade distortions, along with critiques by sceptics. This includes examining not only the economic benefits and costs but also the social and environmental consequences of such reform, to make the case that opening markets is a worthy cause. It also makes the case for why agriculture needs to be included in such negotiations even though it is politically sensitive. Section 2 provides new estimates of the potential economic benefits from such a round, relative to those from (a) moving to complete free trade and (b) forming a Free Trade Area of the Americas (FTAA). Section 3 discusses how to keep costs of adjustment low. The final section stresses what is needed to ensure the Doha round is a significant step forward.

1. The arguments for (and against) removing subsidies and trade barriers

Even before examining the empirical estimates of the potential benefits and costs from grasping trade-liberalizing opportunities, the case can be made that such reform in principle is beneficial economically. It then remains to examine whether particular reforms are also at least benign in terms of social and environmental outcomes. The latter is particularly important because there are many non-economists who believe or assume the social and/or environmental consequences are adverse and seek to persuade others through such means as mass (and sometimes violent) street protests, as occurred at the WTO Trade Ministerial in Seattle in late 1999.

The standard comparative static analysis of national gains from international trade emphasises the economic benefits from production specialization and exchange so as to exploit comparative advantage in situations where a nation's costs of production and/or preferences differ from those in the rest of the world. This is part of the more general theory of the welfare effects of distortions in a trading economy, as summarized by Bhagwati (1971). Domestic industries become more productive as those with a comparative advantage expand by drawing resources from those previously protected industries that grow slower or contract following reform.

The static gains from trade tend to be greater as a share of national output the smaller the economy, particularly where economies of scale in production have not been fully exploited and where consumers (including firms importing intermediate inputs) value variety so that intra- as well as inter-industry trade can flourish. In such cases the more-efficient firms within expanding industries tend to take over the less efficient ones. Indeed theory and empirical studies suggest the shifting of resources *within* an industry may be more welfare-improving than shifts between industries (Melitz 1999; Trefler 2001). They are also greater the more trade barriers have allowed imperfect competition to prevail in the domestic marketplace, which again is more common in smaller economies where industries have commensurately smaller numbers of firms.

Dynamic economic gains from own-country reform

To the standard comparative static analysis needs to be added links between trade and economic growth. The mechanisms by which openness contributes to growth are gradually getting to be better understood, thanks to the pioneering work of such theorists as Grossman and Helpman (1991), Rivera-Batiz and Romer (1991) and the literature those studies spawned. There are several channels through which openness to trade can affect an economy's growth rate. They include the scale of the market when knowledge is embodied in the products traded, the degree of redundant knowledge creation that is avoided through openness (Romer 1994), and the effect of knowledge spillovers.

More importantly from a policy maker's viewpoint, the available empirical evidence strongly supports the view that open economies grow faster (see the survey by USITC 1997). Important econometric studies of the linkage between trade reform and the rate of economic growth include those by Sachs and Warner (1995) and Frankel and Romer (1999). More recent studies also provide some indirect supportive econometric evidence. For example, freeing up the importation of intermediate and capital goods promotes investments that increase growth (Wacziarg 2001). Also, developing economies grow faster the higher the ratio of imported to domestically produced capital goods (Lee 1995; Mazumdar 2001). Rodrigeuz and Rodrik (2001) examine a number of such studies and claim the results they surveyed are not robust. However, in a more recent study that revisits the Sachs and Warner data and then provides new time-series evidence, Wacziarg and Welch (2003) show that dates of trade liberalization do characterize breaks in investment and GDP growth rates. Specifically, for the 1950-1998 period, countries that have liberalized their trade (raising their trade-to-GDP ratio by an average of 5 percentage points) have enjoyed on average 1.5 percentage points higher GDP growth compared with their pre-reform rate. There have also been myriad case studies of liberalization episodes. In a survey of 36 of them, Greenaway (1993) reminds us that many things in addition to trade policies were changing during the studied cases, so ascribing causality is not easy. That, together with some econometric studies that fail to find that positive link, has led Freeman (2003) to suggest the promise of raising the rate of economic growth through trade reform has been overstated. The same could be (and has been) said about the contributions to growth of such things as investments in education, health, agricultural research, and so on (Easterly 2001). A more-general and more-robust conclusion that Easterly draws from empirical evidence, though, is that people respond to incentives. Hence getting incentives right in factor and product markets is crucial – and removing unwarranted subsidies and trade barriers is an important part of that process. Additional evidence from 13 new case studies reported in Wacziarg and Welch (2003) adds further empirical support to that view, as does the fact that there are no examples of autarkic economies that have enjoyed sustained economic growth, in contrast to the many examples since the 1960s of reformed economies that boomed after opening up.

Specifically, economies that commit to less market intervention tend to attract more investment funds, ceteris paribus, which raise their stocks of capital (through greater aggregate savings or at the expense of other economies' capital stocks). More-open economies also tend to be more innovative, because of greater trade in intellectual capital (information, ideas and technologies, sometimes but not only in the form of purchasable intellectual property). Trade liberalization can thereby lead not just to a larger capital stock and a one-off increase in productivity but also to higher *rates* of capital accumulation and productivity growth in the reforming economy because of the way reform energises entrepreneurs. For those higher growth rates to be sustained, though, there is widespread agreement that governments also need to (a) have in place effective institutions to efficiently allocate and protect property rights, (b) allow domestic factor and product markets to function freely, and (c) maintain macroeconomic and political stability (Rodrik 2003; Wacziarg and Welch 2003; Baldwin 2004). Or to paraphrase Panagariya

(2003), trade openness is necessary, but may not be a sufficient condition, for sustained economic growth.[3]

Why, then, do countries retain protectionist policies?

Despite the evident economic gains from removing trade distortions, most countries retain protection from foreign competition for at least some of their industries. Numerous reasons have been suggested as to why a country imposes trade barriers in the first place (infant industry assistance, unemployment prevention, balance of payments maintenance, tax revenue raising, etc.), but all of them are found wanting in almost all circumstances in that a lower-cost domestic policy instrument is available to meet each of those objectives (Corden 1997; Bhagwati 1988). The most compelling explanation for their persistence is a political economy one. The changes in product prices that result from trade liberalization or subsidy cuts necessarily change the prices for the services of productive factors such as land, labour and capital. Hence even though the aggregate income and wealth of a nation may be expected to grow when trade distortions are reduced, not everyone need gain and social safety nets, where they exist, typically provide only partial compensation for such losses. This is the source of resistance to policy reforms: the expected losses in jobs, income and wealth are concentrated in the hands of a few who are prepared to support politicians who resist protection cuts, while the gains are sufficiently small per consumer and export firm and are distributed sufficiently widely as to make it not worthwhile for those potential gainers to get together to lobby for reform, particularly given their greater free-rider problem in acting collectively (Hillman 1989; Grossman and Helpman 1994). Thus the observed pattern of protection in a country at a point in time may well be an equilibrium outcome in a national political market for policy intervention.

What can induce reductions in subsidies and trade barriers?

That political market equilibrium may be altered from time to time. One way is through better dissemination (e.g., by national or international bureaucrats, think tanks, local export industries, foreign import suppliers) of more-convincing information on the benefits to consumers, exporters and the overall economy from reducing subsidies and trade distortions, to balance the views of single-issue non-government organizations (NGOs), labour unions and the like who tend to focus only on the (often over-stated) costs of reform to their constituents. During the past two decades that spreading of more balanced benefit/cost information has contributed to unilateral economic reforms and a consequent opening to trade in numerous developing countries as well as richer countries such as Australia and New Zealand. More recently several major NGOs, together with the OECD Secretariat, have begun to focus on providing better information about the wastefulness of environmentally harmful subsidies – and those efforts have already started to have an impact (e.g. in reducing coal mining subsidies in Europe).

Another way the political equilibrium is altered is technological innovation. The information and telecommunications revolution of the past two decades, for example, has dramatically lowered the costs of doing business across national borders, just as happened with the arrival of steamships and the telegraph during the latter part of the nineteenth century. That increased trading opportunity has made (actual or potential) exporters more eager to get together to counter the anti-trade lobbying of import-protected groups and NGOs.

[3] There is strong evidence that trade reform in general is not only good for economic growth but also, and partly because of that, for poverty alleviation (Winters 2004, Dollar and Kraay 2004, Winters, McCulloch and McKay 2004).

A country's political equilibrium could be upset also by trade opening by one or more other countries, in so far as those reforms alter international prices and volumes of trade and foreign investment and provide greater market access opportunities for exporters. Such opening abroad also adds to the evidence of the net gains and (particularly in the case of phased reforms) the relatively low adjustment costs associated with trade reform, making it easier for exporters to counter the alarmist lobbying of protectionists.

A coincidence of this and the previous two types of shocks has given rise to the latest wave of globalization. This is raising not only the rewards to economies practising good economic governance but also the cost of retaining poor economic governance. Just as financial capital can now flow into a well-managed economy more easily and quickly than ever before, so it can equally quickly be withdrawn if confidence in that economy's governance is shaken – as the East Asian financial crisis of the late 1990s demonstrated all too clearly. A crucial element of good economic governance is a commitment to a permanently open international trade and payments regime (along with sound domestic policies such as secure property rights and prudent monetary and fiscal policies).

In seeking to find politically expedient ways to open their economies, governments are increasingly looking for opportunities to do so bilaterally, regionally or multilaterally. The reason is that the political market equilibrium in two or more countries can be altered in favour of liberalism through an exchange of product market access. If country A allows more imports, it may well harm its import-competing producers if there are insufficient compensation mechanisms; but if this liberalization is done in return for country A's trading partners lowering their barriers to A's exports, the producers of those exports will be better off. The latter extra benefit may be sufficiently greater than the loss to A's import-competing producers that A's liberalizing politicians too become net gainers in terms of electoral, financial or other support in return for negotiating a trade agreement. When politicians in the countries trading with A also see the possibility for gaining from such an exchange of market access, for equal and opposite reasons, prospects for trade negotiations are ripe.[4]

Such gains from trade negotiations involving exchange of market access are potentially greater nationally and globally, the larger the number of countries involved and the broader the product and issues coverage of the negotiations. That is the logic behind negotiating multilaterally with nearly 150 WTO member countries over a wide range of sectors and issues. That WTO process is becoming increasingly cumbersome, however, which has led countries also to negotiate bilaterally or regionally in the hope that faster and deeper integration will result. Preferential free trade areas involving just a subset of countries need not be welfare-enhancing for all participant nations, however, because of trade diversion away from the lowest-cost supplier; and non-participants in the rest of the world may be made worse off too (Pomfret 1997; Schiff and Winters 2003). Hence the need for empirical analysis of the likely gains from different types of prospective trade agreements.

Why all the fuss over agriculture?

In such international trade negotiations, food and agricultural policies often turn out to be the most problematic area. For example, agriculture caused long delays to the Uruguay Round in the late 1980s and 1990s, and it is again proving to be the major stumbling block in the Doha round. It contributed substantially to the failure of the September 2003 Trade Ministerial Meeting in Cancún to reach agreement on how to proceed with the round, after which it took another nine months before a

[4] Elaborations of this economists' perspective can be found in Grossman and Helpman (1995), Hillman and Moser (1995), Maggi and Rodrigeuz-Clare (1998), and Hoekman and Kostecki (2001).

consensus was reached on the Doha work program, otherwise referred to as the July Framework Agreement (WTO 2004).

It is ironic that agricultural policy is so contentious, given its small and declining importance in the global economy. The sector's share of global GDP has fallen from around one-tenth in the 1960s to little more than one-thirtieth today. In developed countries the sector accounts for only 1.8 percent of GDP and only a little more of full-time equivalent employment. Mirroring that decline, agriculture's share of global merchandise trade has more than halved over the past three decades, dropping from 22 percent to 9 percent. For developing countries its importance has fallen even more rapidly, from 42 to 11 percent.

Since policies affecting this declining sector are so politically sensitive, there are always self-interested groups suggesting it be sidelined in trade negotiations – as indeed it has in numerous sub-global preferential trading agreements, and was in the GATT prior to the Uruguay Round.[5] That, however, would do a major disservice to many of the world's poorest people, namely those in farm households in developing countries. It is precisely *because* agricultural earnings are so important to a large number of developing countries that the highly protective farm policies of a few wealthy countries are being targeted by them in the WTO negotiations: better access to rich countries' markets for their farm produce is a high priority for them.

Some developing countries have been granted greater access to developed-country markets for a selection of products under various preferential agreements. Examples are the EU's provisions for former colonies in the Africa, Caribbean and Pacific (ACP) program and more recently for Least Developed Countries under the Everything But Arms (EBA) agreement. Likewise, the United States has its Africa Growth and Opportunity Act (AGOA) and Caribbean Basin Initiative (CBI). These schemes reduce demands for developed-country farm policy reform from preference-receiving countries, but they exacerbate the concerns of other countries excluded from such programs and thereby made worse off through declining terms of trade – and they may even be worsening rather than improving aggregate global and even developing country welfare.

Apart from that, many in developing countries feel they did not get a good deal out of the Uruguay Round. They therefore are determined in the Doha round that they get significantly more market access commitments from developed countries before they contemplate opening their own markets further. Greater market access for developing countries exporters, and especially for poor producers in those countries, is to be found in agriculture (and to a lesser extent in textiles and clothing). This can be seen from a glance at Table 1. It shows that developing country exporters face an average tariff (even after taking account of preferences) of 16 percent for agriculture and food, and 8 percent for textiles and clothing, compared with just 1 percent for other manufactures. The average tariff on agricultural goods imported by developing countries themselves is high too, suggesting even more reason why attention should focus on that sector (along with textiles) in the multilateral reform process embodied in the Doha Development Agenda (DDA).

If agriculture were to be ignored in the Doha negotiations, there is the risk that agricultural protection would start rising again. That is what happened throughout the course of industrial development in Europe and Northeast Asia (Anderson, Hayami and Others 1986, Lindert 1991). It was only with the establishment of the World Trade Organization, in 1995, that agricultural trade was brought under multilateral disciplines via the Uruguay Round Agreement on Agriculture (URAA). That Agreement was ambitious in scope, converting all agricultural protection to tariffs, and limiting increases in virtually all tariffs through tariff bindings. Unfortunately, the process of converting non-

[5] The rules of the GATT are intended, in principle, to cover all trade in goods. However, in practice, trade in agricultural products was largely excluded from their remit as a consequence of a number of exceptions. Details are to be found in Josling, Tangermann and Warley (1996) and in Anderson and Josling (2005).

tariff barriers into tariffs (inelegantly termed "tariffication") provided numerous opportunities for backsliding that greatly reduced the effectiveness of the agreed disciplines (Hathaway and Ingco 1996). In developing countries, the option for "ceiling bindings" allowed countries to set their bindings at high levels, frequently unrelated to the previously prevailing levels of protection. Hence agricultural import tariffs are still very high in both rich and poor countries, with bound rates half as high again as MFN applied rates (Table 2).

As well, agricultural producers in some countries are supported by export subsidies (still tolerated within the WTO only for agriculture) and by domestic support measures. Together with tariffs and other barriers to agricultural imports, these measures support farm incomes and encourage agricultural output to varying extents. The market price support component also typically raises domestic consumer prices of farm products. Figure 1 shows the value and the percentage of total farm receipts from these support policy measures, called the Producer Support Estimate or PSE by the OECD secretariat. For OECD members as a group, the PSE was almost the same in 2001-03 as in 1986-88, at about $240 billion per year. But because of growth in the sector, as a percentage of total farm receipts (inclusive of support) that represents a fall from 37 to 31 percent.

Agricultural protection levels remain very high in these developed countries, especially when bearing in mind that 1986-88 was a period of historically very low international food prices and hence above-trend PSEs. And, as Figure 2 shows, the PSEs have fallen least in the most-protective OECD countries. By contrast, tariff protection to OECD manufacturing has fallen over the past 60 years from a level similar to that for OECD agriculture today (above 30 per cent nominal rate of protection) to only one-tenth of that now. This means far more resources have been retained in agricultural production in developed countries – and hence fewer in developing countries – than would have been the case if protection had been phased down in both agriculture and manufacturing simultaneously.

Nonetheless, the achievements of the Uruguay Round Agreement on Agriculture provide some scope for optimism about what might be achieved via the WTO as part of the DDA and beyond. The current Doha round has the advantage over the Uruguay Round of beginning from the framework of rules and disciplines agreed in that previous Round. In particular, it has the three clearly identified "pillars" of market access, export subsidies, and domestic support on which to focus. True, it took more than three years to agree on a framework for the current negotiations, reached on at the end of July 2004 (WTO 2004), but now that July Framework Agreement is likely to guide the negotiations for some time. It therefore provides a strong basis for undertaking *ex ante* analysis of various options potentially available to WTO members during the Doha negotiations.

What about the social and environmental consequences of trade reform?

Trade liberalization in recent years has attracted a considerable amount of attention of NGOs, as witnessed by their presence on the streets of cities where trade ministers meet (e.g., during the WTO Ministerial in Seattle in late 1999). The groups attracted see trade reform as contributing to the spread of capitalism and in particular of multinational firms, and believe those aspects of globalization add to innumerable social and environmental ills in both rich and poor countries. But just as the traditional economic arguments for protection have been found wanting, so too have the social and environmental ones both conceptually and empirically. For example, there has not been a systematic 'race to the bottom' in environmental or labour standards of rich countries as a result of trade and foreign direct investment growth, and in poor countries foreign corporations often have among the highest environmental and labour standards (Bhagwati and Hudec 1996). Nor has trade growth been a major contributor to the stagnation of wages of unskilled workers in OECD countries (Greenaway and Nelson 2002).

The number of such claims by anti-globalization groups – almost invariably not supported by credible empirical evidence – makes it a huge task to address them all systematically. However, comprehensive yet very readable responses to those claims can be found in two recent books, by Bhagwati (2004) and Wolf (2004).

2. The opportunities provided by the Doha round and FTA negotiations to reduce trade barriers

The gains from reducing government interventions in markets has been well known since the writing of Adam Smith's *Wealth of Nations* more than two centuries ago, and popular magazines such as *The Economist* and more and more daily newspapers continue to remind the public of the virtues of market opening.[6] Even so, greater dissemination of empirical information on the net economic benefits of reducing trade distortions, to balance the often-exaggerated claims by potential losers and their supporters of the adjustment costs of reform, can no doubt assist the liberalization process. Empirical studies can also shed better light and take some of the heat out of debates about whether, in the presence of domestic distortions such as undertaxed pollution, subsidy and trade reform is welfare-reducing. Such studies can also point to the domestic policy reforms that should accompany trade reform so as to guarantee not only national welfare improvement in aggregate but also that there is no significant left-behind group, no unexpected new damage to the environment, etc. Clearly there is an opportunity for well-meaning interest groups, think tanks and national and international economic agencies to spend more money and resources on such empirical studies, and in particular on the effective dissemination of their findings. In an idealistic world in which such studies were able to persuade all governments to fully liberalize their trade unilaterally, the benefit derived from that opportunity would be measured by the gain from moving the world to one free of subsidies and trade barriers. Unlikely though such an outcome may seem in the foreseeable future, it provides a benchmark against which all other opportunities to partially meet this challenge can be measured.

Among the more-feasible opportunities available today for encouraging trade negotiations to stimulate significant market opening, the most obvious is a non-preferential legally binding partial trade liberalization following the WTO's current Doha round of multilateral trade negotiations. That round was launched in Doha, the capital of Qatar, in 2001 with the intention of completing negotiations at the end of 2004, when implementation of the last of the Uruguay Round commitments under WTO were completed. But for comparison it is also worth examining the trade negotiating opportunity to negotiate a Free Trade Area of the Americas (FTAA), which potentially would bring together all the economies of North, Central and South America. This is by far the largest and most ambitious preferential agreement currently in prospect: it dwarfs the bilateral FTA negotiations the US and EU are having with a range of other countries, and it is also more advanced than other current proposals for FTAs such as in South Asia and those involving China.

The estimates below of the potential global economic welfare gains from trade reform are generated using computable general equilibrium (CGE) models of the global economy. The CGE welfare gains refer to the equivalent variation in income (EV) as a result of each of the shocks described.[7] While not without their shortcomings (see Francois 2000, Whalley 2000, Anderson 2003),

[6] On the intellectual history of the virtues of free trade, see Bhagwati (1988, Ch. 2) and Irwin (1996). Bhagwati notes that the virtues of division of labour and exchange were cited twenty four centuries ago in Plato's *Republic* (see the back cover of the October 1985 issue of the *Journal of Political Economy*).

[7] EV is defined as the income that consumers would be willing to forego and still have the same level of well-being after as before the reform.

CGE models are far superior for current purposes to partial equilibrium models, which fail to capture the economy-wide nature of the adjustments to reform whereby some sectors expand when others contract and release capital and labour; and they are also superior to macroeconometric models which typically lack sufficient sectoral detail (Francois and Reinert 1997). They were first used in multilateral trade reform analysis in ex post assessments of the Tokyo Round of GATT negotiations in the late 1970s/early 1980s (Cline et al. 1978; Deardorff and Stern 1979, 1986; Whalley 1985). Since then they have been used increasingly during and following the Uruguay Round, as shown in the various studies summarized in Martin and Winters (1996).

Empirical comparative static studies of the economic welfare gains from trade liberalization typically generate positive gains for the world and for most participating countries. (Exceptions are when a country's welfare is reduced more by a terms of trade change or reduced rents from preferential market access quotas than it is boosted by improvements due to reallocating its resources away from protected industries.) When increasing returns to scale and monopolistic competition (IRS/MC) are assumed instead of constant returns to scale and perfect competition (CRS/PC), and when trade in not just goods but also services is liberalized, the estimates of potential gains can be increased several fold. A few economists have also examined the effects of lowering barriers to international capital flows or labour movements, and some have included estimates of a lowering of trade costs as a result of trade facilitation measures such as streamlining customs-clearance procedures.

Removing all merchandise trade barriers and agricultural subsidies globally

Only a few CGE modelling studies have reported simulations of complete liberalization of trade. The most recent one, which makes use of the newly-released GTAP protection database Version 6.05 and the latest version of the World Bank's Linkage model, is provided in Anderson, Martin and van der Mensbrugghe (2005). That study also provides comparable estimates of partial reforms as proposed for the Doha round. The following are among the key messages that emerge from that study's estimates of the gains from removing all merchandise trade barriers and farm subsidies:

The potential gains from further global trade reform are huge. Global gains from trade reform post-2004 are estimated to be large even if dynamic gains and gains from economies of scale and increased competition are ignored. Freeing all merchandise trade and agricultural subsidies is estimated to boost global welfare by nearly $300 billion per year by 2015 (Table 3), plus whatever productivity effects that reform would generate.

Developing countries would gain disproportionately from such global trade reform. The developing countries would enjoy 32 percent of the global gain from completely freeing all merchandise trade (Table 4a), well above their one-fifth share of global GDP. Their welfare would increase by 1.2 percent, compared with an increase of just 0.6 percent for developed countries. The developing countries' higher share is partly because they have relatively high tariffs themselves (so they would reap substantial efficiency gains from reforming their own protection), and partly because their exports are more concentrated in farm and textile products whose tariffs in developed country markets are exceptionally high (Table 1) – notwithstanding non-reciprocal tariff preferences for many developing countries, which contribute to the losses associated with terms of trade deterioration shown in the middle column of Table 3.

Benefits could be as much from South-South as from South-North trade reform. Trade reform by developing countries is almost as important economically to those countries as is reform by developed countries, including from agricultural liberalization (Table 4b). Hence choosing to delay their own reforms or reforming less than developed countries, and thereby holding back South-South trade growth, could reduce substantially the potential gains to developing countries.

Agriculture is where cuts are needed most. To realize that potential gain from opening up goods markets, it is in agriculture that by far the greatest cuts in bound tariffs and subsidies are required. This is because of the very high rates of assistance in that sector relative to other sectors. Food and agricultural policies are responsible for almost two-thirds of the global gain foregone because of merchandise trade distortions (column 1 of Table 4a) – despite the fact that agriculture and food processing account for less than 10 percent of world trade and less than 4 percent of global GDP. From the point of view of welfare of developing countries, agriculture is almost as important as it is for the world as a whole: their gains from global agricultural liberalization represent almost two-thirds of their total potential gains, which compares with just one-quarter from textiles and clothing and one-eighth from other merchandise liberalization (Table 4b).

In developing countries the poor would gain most from multilateral trade reform. Full global merchandise trade liberalization would raise real factor returns for the poorest households most. This is clear from Table 5, where for developing countries the biggest factor price rise is for farm land, followed by unskilled labor. Since farmers and other low-skilled workers constitute the vast majority of the poor in developing countries, such reform would reduce both inequity and poverty.

Prospective gains from Doha partial liberalization

That same study by Anderson, Martin and van der Mensbrugghe (2005) examines the July 2004 Framework Agreement among WTO members and provides a range of scenarios that might emerge in subsequent negotiations. The lessons drawn from that exercise include the following:

Large cuts in domestic support commitments are needed to erase binding overhang. In turning from the potential gains from full liberalization to what might be achievable under a Doha partial reform package, the devil is going to be in the details. For example, commitments on domestic support for farmers are so much higher than actual support levels at present that the 20 percent cut in the total bound AMS promised in the July Framework Agreement as an early installment will require no actual support reductions for any WTO member. Indeed a cut as huge as 75 percent for those with most domestic support is needed to get some action, and even then it would only require cuts in 2001 levels of domestic support for four WTO actors: the US (by 28 percent), the EU (by 18 percent), Norway (by 16 percent) and Australia by 10 percent – and the EU and Australia have already introduced reforms of that order since 2001, so may need to do no further cutting under even that formula.

Large cuts in bound rates are needed also to erase binding overhang in agricultural tariffs. Table 2 shows there is substantial binding overhang in agricultural tariffs: the average bound rate in developed countries is almost twice as high as the average applied rate, and in developing countries the ratio is even greater. Thus large reductions in bound rates are needed before it is possible to bring about *any* improvements in market access. To bring the global average actual agricultural tariff down by one-third, bound rates would have to be reduced for developed countries by at least 45 percent, and up to 75 percent for the highest tariffs, under a tiered formula.

A complex tiered formula may be little better than a proportional tariff cut. It turns out that, because of the large binding overhang, a tiered formula for cutting agricultural tariffs would generate not much more global welfare – and no more welfare for developing countries as a group – than a proportional cut of the same average size (columns 1 and 2 of Tables 6, 7 and 8). This suggests there may be little value in arguing over the finer details of a complex tiered formula just for the sake of reducing tariff escalation. Instead, a simple tariff cap of, say, 100 or even 200 percent could achieve essentially the same outcome.

Even large cuts in bound tariffs do little if "Sensitive Products" are allowed, except if a cap applies. If members succumb to the political temptation to put limits on tariff cuts for the most sensitive

farm products, much of the prospective gain from Doha could evaporate. Even if only 2 percent of HS6 agricultural tariff lines in developed countries are classified as sensitive (and 4 percent in developing countries, to incorporate also their "Special Products" demand), and are thereby subject to just a 15 percent tariff cut (as a substitute for the TRQ expansion mentioned in the Framework Agreement), the welfare gains from global agricultural reform would shrink by three-quarters. However, if at the same time any product with a bound tariff in excess of 200 percent had to reduce it to that cap rate, however, the welfare gain would shrink by 'only' one-third (columns 3 and 4 of Tables 6, 7 and 8).

High binding overhang means developing countries would have to make few cuts. Given the high binding overhang of developing countries, even with their high tariffs – and even if tiered formulae are used to cut highest bindings most – relatively few of them would have to cut their actual tariffs and subsidies at all (Jean, Laborde and Martin 2005). That is even truer if "Special Products" are subjected to smaller cuts and developing countries exercise their right – as laid out in the July Framework Agreement – to undertake lesser cuts (zero in the case of LDCs) than developed countries. Politically this makes it easier for developing and least developed countries to offer big cuts on bound rates – but it also means the benefits to them are smaller than if they had a smaller binding overhang.

Cotton subsidy cuts would help cotton-exporting developing countries. The removal of cotton subsidies (which have raised producer prices by well over 50 percent in the US and EU – see Sumner 2005) would raise the export price of cotton (although not equally across all exporters because of product differentiation). If those subsidies were removed as part of freeing all merchandise trade, that price rise is estimated to be 8 percent for Brazil but less for Sub-Saharan Africa on average. However, cotton exports from Sub-Saharan Africa would be a huge 75 percent larger, and the share of all developing countries in global exports would be 85 percent instead of 56 percent in 2015, vindicating those countries' efforts to ensure cotton subsidies receive specific attention in the Doha negotiations.

Expanding non-agricultural market access would add substantially to the gains from agricultural reform. By adding a 50 percent cut to non-agricultural tariffs by developed countries (and 33 percent by developing countries and zero by LDCs) to the tiered formula cut to agricultural tariffs would double the gain from Doha for developing countries (compare Scenarios 1 and 5 in Tables 6, 7 and 8). That would bring the global gain to $95 billion from Doha merchandise liberalization, which is a sizable one-third of the potential welfare gain from full liberalization of $278 billion. Adding services reform would of course boost that welfare gain even more.

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Including non-agricultural tariff reform together with agricultural reform helps to balance the exchange of "concessions". The agricultural reforms would boost the annual value of world trade in 2015 by less than one-fifth what would happen if non-agricultural tariffs were also reduced. The latter's inclusion also would help balance the exchange of "concessions" in terms of increases in bilateral trade values: in that case developing countries' exports to high-income countries would then be 2.9 percent higher, which is close to the 2.7 percent increase in high-income countries' exports to developing countries. With only agricultural reform, the latter's bilateral trade growth would be only half the former's (Table 9).

Most developing countries gain, and the rest could if they reform more. Most of the DC gains from that comprehensive Doha scenario go to numerous large developing countries, notably Brazil, Argentina and Other Latin America plus India, Thailand and South Africa plus others in southern Africa. The rest of Sub-Saharan Africa loses less in the comprehensive scenarios as compared with just the agricultural reform scenarios – but it still loses slightly. Those other SSA countries simply are not reducing their very high bound tariffs enough in these scenarios to get sufficient efficiency gains to offset the terms of trade losses suffered either as net food importers, or as recipients of tariff preferences that have eroded with the decline in high-income countries' MFN tariffs, or because of the combined export growth from reforming economies with similar export compositions.

Preference erosion may be less of an issue than commonly assumed. Some least developed countries in Sub-Saharan Africa and elsewhere appear to be slight losers in our Doha simulations when developed countries cut their tariffs and those LDCs choose not to reform at all themselves. These simulations overstate the benefits of tariff preferences for LDCs, however, since they ignore the trade-dampening effect of complex rules of origin and the grabbing of much of the rents by developed-country importers. Even if they were to be losers after correcting for those realities, it remains true that preference-receiving countries could always be compensated for preference erosion via increased aid at relatively very small cost to current preference providers – and in the process other developing countries currently hurt by LCD preferences would enjoy greater access to the markets of reforming developed countries.

Farm output and employment would grow in developing countries under Doha. Despite a few low-income countries losing slightly under our Doha scenarios when they choose to reform little themselves, in all the developing countries and regions shown the levels of output and employment on farms expand. It is only in the most protected developed countries of Western Europe, Northeast Asia and the US that these levels would fall – and even there it is only by small amounts, contrary to the predictions of scaremongers who claim agriculture would be decimated in reforming countries (Table 10). Even if there was a move to completely free merchandise trade, the developed countries' share of the world's primary agricultural GDP by 2015 would be only slightly lower at 24 instead of 28 percent (but their share of global agricultural exports would be diminished considerably more: from 45 to 29 percent).

Developing countries could trade off Special and Differential Treatment for more market access. If developing countries were to tone down their call for Special and Differential Treatment, in terms of wanting smaller cuts and longer phase-in periods, reciprocity means they could expect bigger tariff and subsidy cuts from developed countries. Similarly, if they were to forego their call for lesser cuts for "Special Products", they could demand that developed countries forego their call for some "Sensitive Products" to be subject to smaller tariff cuts. A comparison of Scenarios 5 and 6 in Tables 6, 7 and 8 shows that the economic payoffs for low-income countries even if high-income countries do not reciprocate with larger offers is considerable. Moreover, by embracing those options to reform more in the context of the Doha round would be to take the high moral ground and make it harder for high-income countries to resist the call to respond with larger reforms themselves.

Prospective gains from Removing intra-American trade barriers following the FTAA negotiations

The negotiations to create a Free Trade Area of the Americas (FTAA) – the largest such FTA negotiations currently under way or in prospect – have begun but are stalling periodically. The reason for considering them here is simply to point out that the potential global gains from such an FTA are only a small fraction of those obtainable from multilateral negotiation (because the major economies of Europe and North America are already well integrated and so any new initiatives involve relatively small economies joining one of those hubs or integrating among themselves). Two studies that examine both a multilateral reform (a global 50 percent cut in tariffs, which is somewhat bigger than the most ambitious of the above Doha scenarios where manufacturing is liberalized by 50 percent but agriculture by only about one-third) and the FTAA are by Brown, Deardorff and Stern (2003) and Harrison, Rutherford, Tarr and Gurgel (2003). The global gain from the FTAA in the BDS study is estimated to be just one-twelth of that from a 50 per cent multilateral trade liberalization, and for the HRTG study the difference is even greater.

FTAs of this type are pursued nonetheless for a wide range of reasons, including preferential access to an important protected market (often at the expense of other countries), insurance against anti-

dumping by that partner, and deeper and faster integration than has been possible or is in prospect through the multilateral reform route (Schiff and Winters 2003). The gains to just one or a few developing economies from joining with North America or the EU may be non-trivial, but so too would be the gains from a similar degree of multilateral reform. According to the HRTG study, a multilateral reform involving even just a 25 per cent reduction in merchandise tariffs would benefit South America more than the FTAA, for example. Moreover, such preferential agreements can harm excluded developing and/or developed countries through trade diversion. Indeed the estimated gains to FTAA members are nearly fully offset by losses to excluded economies, according to the HRTG study.

3. Costs of reducing trade barriers

The above benefits from reform are not costless of course. Expenditure on costs of adjustment for firms and workers, as reform forces some industries to downsize or close to allow others to expand, are ignored in the full-employment CGE models discussed above. There are also social costs to consider. They include social safety net provisions in so far as such schemes are developed/drawn on by losers from reform (e.g., unemployment payments plus training grants to build up new skills so displaced workers can earn the same wage as before), and perhaps increased costs of crime in so far as its incidence rises with transitional unemployment.

All three types are one-off costs to weigh against the non-stop flow of economic benefits from reform. The private and social costs of adjustment tend to be smaller, the longer the phase-in period or smaller the tariff or subsidy cut per year (Furusawa and Lai 1999). Also, CGE simulation studies suggest that the annual change in an industry's terms of trade due to phased trade reform is typically very minor relative to changes due to exchange rate fluctuations, technological improvements, preference shifts and other economic shocks and structural developments associated with normal economic growth.

Estimates of the magnitude of those costs are difficult to generate, but all available estimates suggest they are minor relative to the benefits from reform. An early study by Magee (1972) for the United States estimated the cost of job changes including temporary unemployment to be one-eighth of the benefits from tariff and quota elimination initially. Even assuming that transition took as many as five years, he estimated a benefit/cost ratio of 25. A subsequent study which examined a 50 per cent cut in US tariffs (but not quotas) came up with a similar benefit/cost estimate (Baldwin, Mutti and Richardson 1980). In more recent debates about trade and labour, analysts have had difficulty finding a strong link between import expansion and increased unemployment (see Greenaway and Nelson 2002). One example is a study of the four largest EU economies' imports from East Asia (Bentivogli and Pagano 1999). Another European example is a study of the UK footwear industry: liberalizing that market would incur unemployment costs only in the first year, because of the high job turnover in that industry, and those estimated costs are less than 1.5 per cent of the benefits from cutting that protection (Winters and Takacs 1991). A similar-sized estimate is provided by de Melo and Tarr (1990) using a CGE model that focuses just on US textile, steel and auto protection cuts and drawing on estimates of the cost of earnings lost by displaced workers (later reported by Jacobson, LaLonde and Sullivan 1993). For developing countries also the evidence seems to suggest low costs of adjustment, not least because trade reform typically causes a growth spurt (Krueger 1983). In a study of 13 liberalization efforts for nine developing countries, Michaely et al. (1991) found only one example where employment was not higher within a year. A similar study for Mauritius by Milner and Wright (1998) also found trade opening to be associated with employment growth rather than decline.

If the adjustment costs are so small and may lead to more rather than less jobs even during the adjustment period, why are governments so reluctant to open their economies? The reason is because the

losses in jobs and asset values are very obvious and concentrated whereas the gains in terms of new job and investment opportunities are thinly spread, are less-easily attributed to the trade reform, and are taken up often by people other than those losing from the reform. As discussed above, the few losers are prepared to support politicians who resist protection cuts, while the gains are sufficiently small per consumer and unassisted firm as to make it not worthwhile for those many potential gainers to get together to lobby for reform, particularly given their greater free-rider problem in acting collectively (Olsen 1965). Hence the need for publicly funded trade policy think-tanks and the like to play an advocacy role.

An example of the role analysis can play has to do with effects on developing countries of reforms to support for agriculture in OECD economies. The primary channel for such effects is through the terms of trade, which in turn depend in part on whether a country is a net exporter or importer of the affected OECD products. Long-term support for agriculture in OECD countries, coupled with often-negative assistance to farmers in many developing countries, has left developing countries as a group dependent on imports of these subsidized products. As a result, an across-the-board cut in all domestic support for OECD agriculture leads to welfare losses for some developing countries and to declines in farm incomes in Europe, Japan and North America. Such a reform package is therefore unlikely to be implemented on its own. An alternative approach is to focus on broad-based reductions in market price support, as has begun occurring in the EU where domestic support has increasingly replaced border measures. As Dimaranan, Hertel and Keeney (2003) show, a shift from market price support to land-based payments could generate a win-win-win outcome whereby OECD farm incomes are maintained and yet world price distortions are reduced and economic welfare rises for most developing countries and globally. Provided these increased domestic support payments are not linked to output or variable inputs, the trade-distorting and welfare-reducing effects are likely to be small, thereby providing an effective way of offsetting the potential losses that would otherwise be sustained by OECD farmers. This type of policy re-instrumentation increases the probability that such reforms is politically acceptable in the reforming economies while simultaneously increasing the likelihood that they will be beneficial to developing countries. That analysis suggests developing country governments should focus their efforts on improved access to OECD food markets while permitting wealthy countries to increase their decoupled domestic payments as import tariffs are lowered.

4. What is needed to make Doha a success

The good news in this paper is that there is a great deal to be gained from liberalizing merchandise – and especially agricultural – trade under Doha, with a disproportionately high share of that potential gain available for developing countries (relative to their share of the global economy). Moreover, it is the poorest people in developing countries that appear to be most likely to gain from global trade liberalization, namely farmers and unskilled laborers in developing countries.[8] To realize that potential gain, it is in agriculture that by far the greatest cuts in bound tariffs and subsidies are required. However, the political sensitivity of farm support programs, coupled with the complexities of the measures introduced in the Uruguay Round Agreement on Agriculture and of the modalities set out in the Doha Framework Agreement of July 2004, ensure the devil will be in the details of the final Doha agreement. It is for that reason that ex ante empirical analysis of the sort referred to above is a prerequisite for countries engaged in the Doha round of negotiations.

[8] For more on the potential poverty consequences of the Doha round, see Hertel and Winters (2005).

What emerges from that analysis is that developing countries would not *have* to reform very much under Doha, because of the large gaps between their tariff bindings and applied rates. That is even truer if they exercise their right (as laid out in the July Framework Agreement) to undertake lesser tariff cuts than developed countries. In that case, they gain little in terms of improved efficiency of national resource use. Yet, as Panagariya (2004) and others have warned, for a non-trivial number of low-income countries their terms of trade could deteriorate. For some that is because they would lose tariff preferences on their exports. For others it is because they are net food importers and so would face higher prices for their imports of temperate foods. To realize more of their potential gains from trade, developing and least developed countries would need to forego some of the Special and Differential Treatment they have previously demanded, and perhaps also commit to additional unilateral trade (and complementary domestic) reforms, and to invest more in trade facilitation. High-income countries could encourage them to do so by being willing to open up their own markets more to developing country exports and by providing more targeted aid – and in the process be rewarded for it: Table 4 shows high-income countries have nearly as much to gain from developing country reform as from within their own country group.

In conclusion, the July Framework Agreement does not guarantee major gains from the Doha Development Agenda. On the one hand, even if an agreement is ultimately reached, it may be very modest. How modest depends on, among other things, the nature of the agricultural tariff-cutting formula, the size of the cuts, the extent to which exceptions for Sensitive and Special Products are allowed, whether a tariff cap is introduced, and the extent to which Special and Differential Treatment is invoked by developing countries. But what is equally clear, on the other hand, is that major gains are possible if only the political will to reform protectionist policies – especially in agriculture -- can be mustered.

References

Anderson, K. (2003), 'Measuring Effects of Trade Policy Distortions: How Far Have We Come?' *The World Economy* 26(4): 413-40, April.

Anderson, K. (2004), 'Subsidies and Trade Barriers', in *Global Crises, Global Solutions,* edited by B. Lomborg, Cambridge and New York: Cambridge University Press.

Anderson, K. (2005a), 'Setting the Trade Policy Agenda: What Role for Economists?" *Journal of World Trade* 39(2), April (forthcoming).

Anderson, K. (2005b), 'The Challenge of Reducing Trade Distortions', *The Economic Record* 81 (forthcoming).

Anderson, K., Hayami, Y. and Others (1986), *The Political Economy of Agricultural Protection: East Asia in International Perspective*, Boston, London and Sydney: Allen and Unwin.

Anderson, K. and T.E. Josling (eds.) (2005), *The WTO and Agriculture*, London: Edward Elgar Publishers.

Anderson, K., W. Martin and D. van der Mensbrugghe (2005a), 'Market and Welfare Implications of Doha Reform Scenarios', Ch. 12 in *Agricultural Trade Reform and the Doha Development Agenda*, edited by W. Martin and K. Anderson, Washington DC: World Bank (forthcoming).

Bacchetta, M. and M Jansen (2003), 'Adjusting to Trade Liberalization: The Role of Policy, Institutions and WTO Disciplines,' Special Studies 7, Geneva: World Trade Organization, April.

Bagwell, K. and R.W. Staiger (2004), 'Subsidy Agreements', NBER Working Paper 10292, Cambridge MA, February.

Baldwin, R.E. (2004), 'Openness and Growth: What's the Empirical Relationship?' in *Challenges to Globalization: Analysing the Economics*, edited by R.E. Baldwin and L.A. Winters, Chicago: University of Chicago Press for NBER and CEPR (forthcoming).

Baldwin, R.E., J. Mutti and J.D. Richardson (1980), 'Welfare Effects on the United States of a Significant Multilateral Trade Reduction', *Journal of International Economics* 6: 405-23.

Baldwin, R., R. Forslid, P. Martin, G.M. Ottaviano and F. Robert-Nicoud (2003), *Economic Geography and Public Policy*, Princeton NJ: Princeton University Press.

Beers, C. van and A. de Moor (2001), *Public Subsidies and Policy Failures: How Subsidies Distort the Natural Environment, Equity and Trade and How to Reform Them*, Cheltenham: Edward Elgar.

Bendivogli, C. and P. Pagano (1999), 'Trade, Job Destruction and Job Creation in European Manufacturing', *Open Economies Review* 10: 156-84.

Bhagwati, J.N. (1971), 'The Generalized Theory of Distortions and Welfare', in *Trade, Balance of Payments and Growth*, edited by J.N. Bhagwati et al, Amsterdam: North-Holland.

Bhagwati, J.N. (1988), *Protectionism*, Cambridge MA: MIT Press.

Bhagwati, J.N. (2004), *In Defence of Globalization*, Cambridge MA: MIT Press.

Bhagwati, J.N. and R. Hudec (eds.) (1996), *Fair Trade and Harmonization*, Cambridge MA: MIT Press.

Broda, C.M. and D.E. Weinstein (2004), 'Globalization and the Gains from Variety', NBER Working Paper 10314, Cambridge MA, February.

Brown, D., A.V. Deardorff and R.M. Stern (2003), 'Multilateral, Regional and Bilateral Trade-Policy Options for the United States and Japan', *The World Economy* 26(6): 803-28, June.

Cline, W.R., T.O. Kawanabe, M. Kronsjo and T. Williams (1978), *Trade Negotiations in the Tokyo Round: A Quantitative Assessment*, Washington DC: Brookings Institution.

Coase, R. (1960), 'The Problem of Social Cost', *Journal of Law and Economics* 3:1-44.

Corden, W.M. (1997), *Trade Policy and Economic Welfare* (second edition), Oxford: Clarendon Press.

Deardorff, A.V. and R.M. Stern (1979), *An Economic Analysis of the Effects of the Tokyo Round of Multilateral Trade Negotiations on the United States and Other Major Industrial Countries*, MTN Studies 5, Washington DC: U.S. Government Printing Office.

Deardorff, A.V. and R.M. Stern (1986), *The Michigan Model of World Production and Trade: Theory and Applications*, Cambridge MA: MIT Press.

Diebold, W., Jr. (1952), *The End of the ITO*, International Finance Section, Essays in International Finance No. 16, Princeton NJ: Princeton University Press.

Dimaranan, B., T. Hertel and R. Keeney (2003), 'OECD Domestic Support and the Developing Countries,' GTAP Working Paper No. 19, West Lafayette: Center for Global Trade Analysis, Purdue University.

Dimaranan, B.V. and R.A. McDougall (eds.) (2002), *Global Trade, Assistance, and Production: The GTAP 5 Data Base*, West Lafayette: Center for Global Trade Analysis, Purdue University.

Dollar, D. and A. Kraay (2004), 'Trade, Growth and Poverty', *Economic Journal* 114: F22-F49, February.

Easterly, W. (2001), *The Elusive Quest for Growth*, Cambridge MA: MIT Press.

Ethier, W.J. (1996), 'Theories about Trade Liberalization and Migration: Substitutes or Complements?' pp. 50-68 in *International Trade and Migration in the APEC Region*, edited by P.J. Lloyd and L.S. Williams, London and Melbourne: Oxford University Press.

Evans, C. (2003), 'The Economic Significance of National Border Effects', *American Economic Review* 93(4): 1291-1312, September.

Feenstra, R.C., J.R. Markusen and W. Zeile (1992), 'Accounting for Growth with New Inputs', *American Economic Review* 82(2): 415-21, May.

Francois, J.F. (2000), 'Assessing the Results of General Equilibrium Studies of Multilateral Trade Negotiations', Policy Issues in International Trade and Commodities Study Series No. 3, Geneva: UNCTAD.

Francois, J.F. (2003), 'Assessing the Impact of Trade policy on Labour Markets and Production', pp. 61-88 in *Methodological Tools for SIA*, CEPII Working Paper No. 2003-19, Paris: CEPII.

Francois, J.F. and W. Martin (2003), 'Formula Approaches to Market Access Negotiations', *The World Economy* 26(1): 1-28, January.

Francois, J.F. and K.A. Reinert (eds.) (1997), *Applied Methods for Trade Policy Analysis: A Handbook*, Cambridge and New York: Cambridge University Press.

Frankel, J.A. and D. Romer (1999), 'Does Trade Cause Growth?' *American Economic Review* 89(3): 379-99, June.

Freeman, R.B. (2003), 'Trade Wars: The Exaggerated Impact of Trade in Economic Debate', Research Paper 2003/42, Leverhulme Centre for research on Globalizaation and Economic Policy, University of Nottingham.

Fujita, M., P. Krugman and A.J. Venables (2001), *The Spatial Economy: Cities, Regions and International Trade*, Cambridge MA: MIT Press.

Fujita, M. and J. Thisse (2002), *Economics of Agglomeration: Cities, Industrial Location and Regional Growth*, Cambridge and New York: Cambridge University Press.

Furusawa, T. and E.L.C. Lai (1999), 'Adjustment Costs and Gradual Trade Liberalization' *Journal of International Economics* 49: 333-61.

Greenaway, D. (1993), 'Liberalizing Foreign Trade Through Rose-Tinted Glasses', *Economic Journal* 103: 208-22.

Greenaway, D. and D.R. Nelson (eds.) (2002), *Globalization and Labour Markets*, (two volumes), London: Edward Elgar Publishers.

Grossman, G.M. and E. Helpman (1991), *Innovation and Growth in the Global Economy*, Cambridge, Mass.: MIT Press.

Grossman, G. and E. Helpman (1994), 'Protection for Sale', *American Economic Review* 84(4): 833-50, September.

Grossman, G. and E. Helpman (1995), 'Trade Wars and Trade Talks', *Journal of Political Economy* 103(4): 675-708, August.

Harrison, G.W., T.F. Rutherford, D.G. Tarr and A. Gurgel (2003), 'Regional, Multilateral and Unilateral Trade policies on MERCOSUR for Growth and Poverty Reduction in Brazil', mimeo, World Bank, Washington DC, May.

Hathaway, D. and M. Ingco (1996), 'Agricultural Liberalization and the Uruguay Round' Ch. 2 in *The Uruguay Round and the Developing Countries*, edited by W. Martin and L.A. Winters, Cambridge and New York: Cambridge University Press.

Hertel, T.W. (ed.) 1997. *Global Trade Analysis: Modeling and Applications*, Cambridge and New York: Cambridge University Press.

Hertel, T.W., D. Hummels, M. Ivanic, and R. Keeney (2003), 'How Confident Can We Be in CGE-based Assessments of Free Trade Agreements?' GTAP Working Paper No. 26, West Lafayette: Center for Global Trade Analysis, Purdue University, May.

Hertel, T.W. and L.A. Winters (eds.) (2005), *Putting Development Back Into the Doha Agenda: Poverty Impacts of a WTO Agreement*, Washington DC: World Bank and New York: Oxford University Press (forthcoming).

Hillman, A.L. (1989), *The Political Economy of Protection*, New York: Harwood Academic.

Hillman, A.L. and P. Moser (1995), 'Trade Liberalization as Politically Optimal Exchange of Market Access', in M. Canzoneri, W. Ethier and V. Grilli (eds.), *The New Transatlantic Economy*, Cambridge and New York: Cambridge University Press.

Hoekman, B.M. and M. Kostecki (2001), *The Political Economy of the World Trading System: The WTO and Beyond*, Second Edition, London and New York: Oxford University Press.

Hoekman, B., F. Ng and M. Olarreaga (2004), 'Agricultural Tariffs versus Subsidies: What's More Important for Developing Countries?' *World Bank Economic Review* 18 (forthcoming).

Irwin, D.A. (1996), *Against the Tide: An Intellectual History of Free Trade*, Cambridge MA: MIT Press.

Irwin, D.A. (2002), *Free Trade Under Fire*, Princeton: Princeton University Press.

Jacobson, L.S., R.J. LaLonde and D.G. Sullivan (1993), 'Earnings Losses of Displaced Workers', *American Economic Review* 83(4): 685-709, September.

Jean, S., D. Laborde and W. Martin (2005), 'Consequences of Alternative Formulas for Agricultural Tariff Cuts', Ch. 4 in *Agricultural Trade Reform and the Doha Development Agenda*, edited by W. Martin and K. Anderson, Washington DC: World Bank (forthcoming).

Josling, T.E., S. Tangermann and T.K. Warley (1996), *Agriculture in the GATT*, London: Macmillan and New York: St. Martin's Press.

Kindleberger, C.P. (1989), 'Commercial Policy Between the Wars', in Peter Mathias and Sidney Pollard (eds.), *The Cambridge Economic History of Europe, vol. 8*. Cambridge: Cambridge University Press.

Krueger, A.O. (1983), *Trade and Employment in Developing Countries, Volume 3: Synthesis and Conclusions*, Chicago: University of Chicago Press for NBER.

Krueger, A.O. (1999), 'Free Trade Agreements as Protectionist Devices: Rules of Origin', pp. 91-102 in *Trade Theory and Econometrics: Essays in Honour of John S. Chipman*, edited by J. Melvin, J. Moore and R. Riezman, London: Routledge.

Lee, J.-W. (1995), 'Capital Goods Imports and Long-Run Growth', *Journal of Development Economics* 48: 91-110, October.

Lindert, P. (1991), 'Historical Patterns of Agricultural Protection', in *Agriculture and the State*, edited by P. Timmer, Ithaca: Cornell University Press.

Lomborg, B. (ed.) (2004), *Global Crises, Global Solutions*, Cambridge and New York: Cambridge University Press.

Lucas, R.E. Jr. (2002), *Lectures on Economic Growth*, Cambridge MA: Harvard University Press.
Magee, S.P. (1972), 'The Welfare Effects of Restrictions on US Trade', *Brookings Papers on Economic Activity* 3: 645-701.
Maggi, G. and A. Rodrigeuz-Clare (1998), 'The Value of Trade Agreements in the Presence of Political Pressures', *Journal of Political Economy* 106(3): 574-601, June.
Martin, W. and K. Anderson (eds.) (2005), *Agricultural Trade Reform and the Doha Development Agenda*, Washington DC: World Bank (forthcoming).
Martin, W. and L.A. Winters (eds.) (1996), *The Uruguay Round and the Developing Countries*, Cambridge and New York: Cambridge University Press.
Matusz, S. and D. Tarr (2000), 'Adjusting to Trade Policy Reform', in *Economic Policy Reform: The Second Stage*, edited by A.O. Krueger, Chicago: University of Chicago Press.
Mazumdar, J. (2001), 'Imported Machinery and Growth in LDCs', *Journal of Development Economics* 65: 209-224, June.
Melitz, M. (1999), 'The Impact of Trade on Intra-industry Reallocations and Aggregate Industry Productivity', Economics Working Paper, Harvard University, Cambridge MA, November.
Melo, J. de and D. Tarr (1990), 'Welfare Costs of US Quotas on Textiles, Steel and Autos', *Review of Economics and Statistics* 72: 489-97.
van der Mensbrugghe, D. (2004), "LINKAGE Technical Reference Document: Version 6.0," *mimeo*, The World Bank, Washington, DC.
Messerlin, P. (2004), *Trade for Development*, Report to Kofi Annan of the Task Force on Trade for the UN Millennium Development Goals Project, New York: United Nations, December.
Michaely, M., D. Papageorgiou and A. Choksi (eds.) (1991), *Liberalizing Foreign Trade, 7: Lessons of Experience in the Developing World*, Oxford: Basil Blackwell.
Milner, C. and P. Wright (1998), 'Modelling Labour Market Adjustment to Trade Liberalization in an Industrializing Country', *Economic Journal* 108: 509-28, March.
Olsen, M. (1965), *The Logic of Collective Action*, Cambridge MA: Harvard University Press.
Panagariya, A. (2004), 'Subsidies and Trade Barriers: Alternative Perspective 10.2', pp.592-601 in *Global Crises, Global Solutions*, edited by B. Lomborg, Cambridge and New York: Cambridge University Press.
Pomfret, R. (1997), *The Economics of Regional Trading Arrangements*, London: Oxford University Press.
Rivera-Batiz, L. and P. Romer (1991), 'International Integration and Endogenous Growth', *Quarterly Journal of Economics* 106: 531-56.
Rodrigeuz, F. and D. Rodrik (2001), 'Trade Policy and Economic Growth: A Skeptic's Guide to Cross-National Evidence', in B.S. Bernanke and K. Rogoff (eds.), *NBER Macroeconomics Annual 2000*, Cambridge MA: MIT Press.
Romer, P. (1986), 'Increasing Returns and Long-Run Growth,' *Journal of Political Economy* 94(5): 1002-37, October.
Romer, P. (1994), 'New Goods, Old Theory, and the Welfare Costs of Trade Restrictions,' *Journal of Development Economics* 43(1): 5-38,
Sachs, J.D. and A. Warner (1995), 'Economic Reform and the Process of Global Integration', *Brookings Papers on Economic Activity* 1: 1-95.
Sala-i-Martin, X. (2002), 'The World Distribution of Income (Estimated from Individual Country Distributions)', NBER Working Paper 8933, Cambridge MA, May.
Schiff, M. and L.A. Winters 2003), *Regional Integration and Development*, London and New York: Oxford University Press for the World Bank.

Sumner, D.A. (2005), 'Reducing Cotton Subsidies: The DDA Cotton Initiative', Ch. 10 in *Agricultural Trade Reform and the Doha Development Agenda*, edited by W. Martin and K. Anderson, Washington DC: World Bank (forthcoming).

Trefler, D. (2001), 'The Long and Short of the Canada-US Free Trade Agreement', NBER Working Paper No. 8293, May.

Tyers, R. and K. Anderson (1992), *Disarray in World Food Markets: A Quantitative Assessment*, Cambridge and New York: Cambridge University Press.

USITC (1997), *The Dynamic Effects of Trade Liberalization: An Empirical Analysis*, Investigation No. 332-375, Publication 3069, Washington, D.C.: Unites States International Trade Commission, October.

Wacziarg, R. (2001), 'Measuring the Dynamic Gains From Trade' *World Bank Economic Review* 15(3): 393-429, October.

Wacziarg, R. and K.H. Welch (2003), 'Trade Liberalization and Growth: New Evidence', NBER Working Paper 10152, Cambridge MA, December.

Whalley, J. (1985), *Trade Liberalization Among Major World Trading Areas*, Cambridge MA: MIT Press.

Whalley, J. (2000), 'What Can the Developing Countries Infer from the Uruguay Round Models for Future Negotiations?' Policy Issues in International Trade and Commodities Study Series No. 4, Geneva: UNCTAD.

Winters, L.A. (2004), 'Trade Liberalization and Economic Performance: An Overview', *Economic Journal* 114: F4-F21, February.

Winters, L.A., N. McCulloch and A., McKay (2004), 'Trade Liberalization and Poverty: The Empirical Evidence', *Journal of Economic Literature* 62(1): 72-115, March.

Winters, L.A. and W.E. Takacs (1991), 'Labour Adjustment Costs and British Footwear Protection', *Oxford Economic Papers* 43: 479-501.

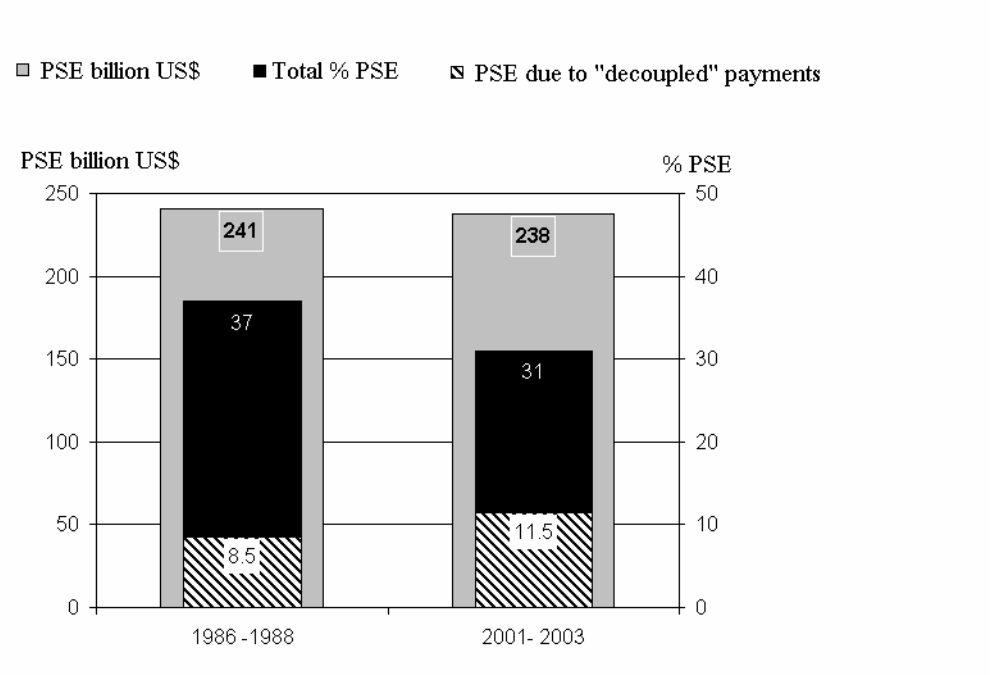
Wolf, M. (2004), New Haven: Yale University Press.

WTO (2003), 'Negotiations on Agriculture: First Draft of Modalities for the Further Commitments', TN/AG/W/1/Rev.1, Geneva: World Trade Organization, 19 March (The Harbinson Draft).

WTO (2004), 'Doha Work Programme: Decision Adopted by the General Council on 1 August 2004', WT/L/579, Geneva: World Trade Organization (The July Framework Agreement).

Figure 1: Agricultural producer support in high-income countries, by value, percent and type of support, 1986 to 2003

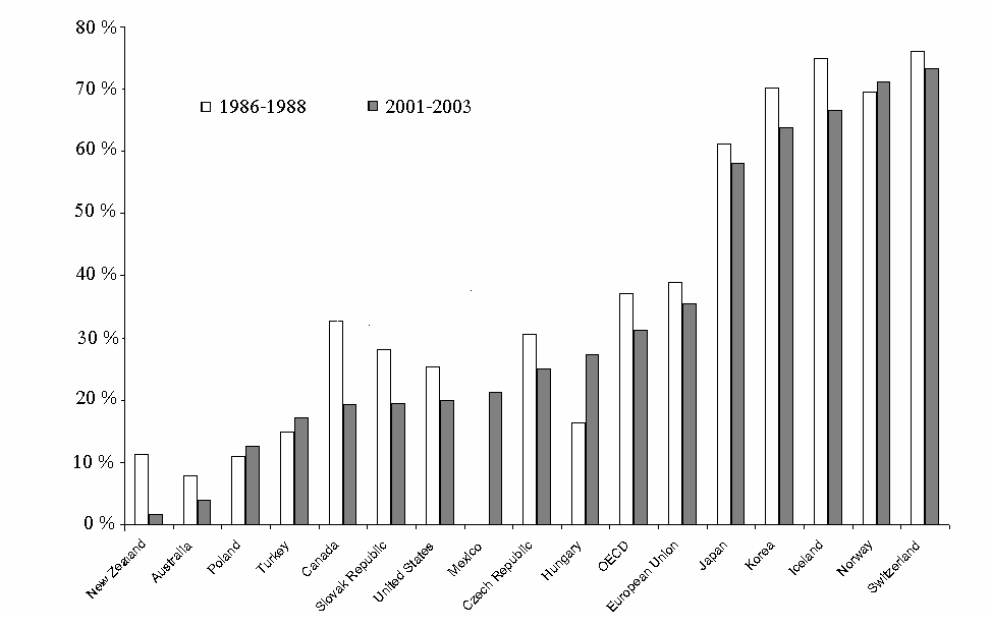
($ billion and percentage of total farm receipts from support policy measures)



Source: PSE estimates from the OECD's database (see www.oecd.org)

Figure 2: Agricultural producer support in high-income countries, by country, 1986 to 2003

(percentage of total farm receipts from support policy measures)



[1] Czech Republic, Hungary, Poland and the Slovac Republic data are for 1991-93 in the first period.

[2] Austria, Finland and Sweden are included in the OECD average for both periods but also in the EU average for the latter period.

Source: PSE estimates from the OECD's database (see www.oecd.org)

Table 1: Average applied import tariffs, by sector and region, 2001

(percent, *ad valorem* equivalent)

Importing Region: / *Exporting region:*	**High-income countries**[b]	**Developing countries**[a]	WORLD
Agriculture and food			
High-income countries[b]	18	18	18
Developing countries[a]	14	18	16
Textiles and wearing apparel			
High-income countries[b]	8	15	12
Developing countries[a]	7	20	9
Other manufactures			
High-income countries[b]	1	9	4
Developing countries[a]	1	7	3
All merchandise			
High-income countries[b]	3	10	5
Developing countries[a]	3	10	5

[a] These import-weighted averages incorporate tariff preferences provided to developing countries, unlike earlier versions of the GTAP database.

[b] High-income countries include the newly industrialized East Asian customs territories of Hong Kong, Korea, Singapore and Taiwan as well as Europe's transition economies that joined the EU in April 2004.

Source: Anderson, Martin and van der Mensbrugghe (2005a, Tables A12.3)

Table 2: Agricultural weighted average import tariffs, by region, 2001

(percent, *ad valorem* equivalent, weights based on imports)

	Bound tariff	MFN applied tariff	Actual applied tariff[a]
Developed countries	27	22	14
Developing countries	48	27	21
of which: LDCs	*78*	*14*	*13*
WORLD	37	24	17

[a] Includes preferences and in-quota TRQ rates where relevant, as well as the ad valorem equivalent of specific tariffs. Developed countries include Europe's transition economies that joined the EU in April 2004. The 'developing countries' definition used here is that adopted by the WTO and so includes East Asia's four newly industrialized tiger economies, which is why the 21 percent shown in column 3 is above the 18 and 14 percent shown in the first column of Table 1.

Source: Jean, Laborde and Martin (2005a)

Table 3: Impacts on real income from full liberalization of global merchandise trade, by country/region, 2015

(*Impacts in* 2015 *relative to the baseline, in 2001 dollars*)

	Real income gain **($billion)**	**Gain due just to change in terms of trade** ($billion)	***as % of baseline income in 2015***
Australia and New Zealand	7.6	4.5	*1.3*
EU 25 plus EFTA	60.4	-1.5	*0.6*
United States	12.3	11.8	*0.1*
Canada	3.3	0.2	*0.4*
Japan	52.2	6.4	*1.0*
Korea and Taiwan	44.2	0.1	*3.5*
Hong Kong and Singapore	11.0	7.7	*2.5*
Argentina	5.8	1.7	*1.5*
Bangladesh	0.1	-1.1	*0.1*
Brazil	10.9	5.3	*1.7*
China	3.3	-9.2	*0.1*
India	4.1	-9.2	*0.5*
Indonesia	2.2	0.2	*0.8*
Thailand	8.1	0.8	*4.0*
Vietnam	3.0	-0.2	*5.3*
Russia	3.0	-2.6	*0.6*
Mexico	2.8	-3.7	*0.3*
South Africa	1.5	0.1	*1.0*
Turkey	3.4	0.2	*1.4*
Rest of South Asia	1.1	-0.8	*0.6*
Rest of East Asia	4.9	-1.2	*1.7*
Rest of LAC	11.4	0.3	*1.4*
Rest of ECA	1.4	-1.4	*0.5*
Middle East and North Africa	12.9	-7.0	*1.1*
Selected SSA countries	1.1	0.6	*1.7*
Rest of Sub Saharan Africa	2.5	-2.2	*1.2*
Rest of the World	3.5	0.1	*1.6*
High-income countries	190.9	29.1	*0.6*
Developing countries--WTO definition	142.1	-21.6	*1.2*
Low- and middle-income countries	87.0	-29.4	*0.9*
Middle-income countries	69.4	-16.7	*0.8*
Low-income countries	17.6	-12.7	*0.9*
East Asia and Pacific	21.5	-9.6	*0.6*
South Asia	5.3	-11.1	*0.5*
Europe and Central Asia	7.8	-3.8	*0.8*
Middle East and North Africa	12.9	-7.0	*1.1*
Sub-Saharan Africa	5.1	-1.6	*1.2*
Latin America and the Caribbean	31.0	3.6	*1.1*
World total	**277.9**	**-0.3**	***0.7***

Source: Anderson, Martin and van der Mensbrugghe (2005a, Table 12.3)

Table 4: Effects on economic welfare of full trade liberalization from different groups of countries and products, 2015

(percent)

(a) Distribution of effects on* global *welfare

From full lib'n of:	Agriculture and food	Textiles and clothing	*Other manufactures*	ALL GOODS
Percentage due to:				
Developed[a] countries policies	42	6	20	68
Developing countries' policies	20	8	4	32
ALL COUNTRIES' POLICIES	**62**	**14**	**24**	**100**

(b) Distribution of effects on* developing countries' *welfare

From full lib'n of:	Agriculture and food	Textiles and clothing	*Other manufactures*	ALL GOODS
Percentage due to:				
Developed[a] countries' policies	34	16	7	57
Developing countries' policies	28	9	6	43
ALL COUNTRIES' POLICIES	**62**	**25**	**13**	**100**

[a] Developed countries include Europe's transition economies that joined the EU in April 2004. The 'developing countries' definition used here is that adopted by the WTO and so includes East Asia's four newly industrialized tiger economies.

Source: Anderson, Martin and van der Mensbrugghe (2005a, Table 12.4)

Table 5: Impacts of full global merchandise trade liberalization on real factor prices, 2015[a]

(*Percent change relative to the baseline in* 2015)

	Un-skilled wages	Skilled wages	Capital	Land owner rent	CPI
Australia and New Zealand	3.5	1.1	-0.6	20.9	1.5
EU 25 plus EFTA	-0.1	1.3	0.4	-71.0	-1.2
United States	0.0	0.2	-0.1	-24.0	-0.3
Canada	0.5	0.8	0.1	-5.2	-1.1
Japan	1.5	2.4	1.2	-67.2	-0.2
Korea and Taiwan	7.3	7.8	4.5	-45.8	-1.3
Hong Kong and Singapore	3.3	1.6	0.3	10.1	1.1
Argentina	3.3	0.4	-1.0	25.2	1.1
Bangladesh	1.7	1.6	-0.5	2.1	-6.9
Brazil	2.8	1.4	1.5	35.9	2.8
China	2.0	1.8	2.4	-0.2	-0.1
India	2.2	3.8	0.9	-2.9	-5.0
Indonesia	3.4	1.2	0.5	1.4	0.9
Thailand	13.4	6.3	3.7	12.5	-0.2
Vietnam	23.3	15.1	8.8	5.8	-0.2
Russia	2.0	2.7	3.2	-1.5	-3.0
Mexico	1.9	1.4	0.1	-3.6	-1.1
South Africa	2.8	2.2	1.4	10.7	-1.2
Turkey	1.6	3.0	0.8	-6.5	-0.1
Rest of South Asia	3.4	2.7	-0.5	0.3	-2.1
Rest of East Asia	5.4	3.6	4.4	-0.3	-1.0
Rest of Latin America & Car	5.9	1.2	-0.8	19.9	-0.7
Rest of E. Europe & C. Asia	2.8	3.6	1.9	1.1	-2.3
Middle East & North Africa	3.8	3.2	1.8	7.1	-2.4
Other Southern Africa	6.4	1.2	-0.3	5.3	1.1
Rest of Sub-Saharan Africa	8.4	5.7	1.5	6.4	-4.3
Rest of the World	4.6	2.6	1.0	7.1	-1.2

Source: Anderson, Martin and van der Mensbrugghe (2005a, Tables 12.7)

Table 6: Welfare effects of possible Doha reform scenarios, 2015

(percent difference from baseline, and Equivalent Variation in income in 2001 $billion)

	Agricultural subsidy cuts[a] plus:					
	Tiered agricultural tariff cuts[b]	Propn'l agricultural tariff cuts[b]	Scenario 2 plus 2% SSP	Scenario 3 plus 200% cap	Scenario 1 plus 50% NAMA cut for HICs[c]	Scenario 5 plus DCs cuts same as for HICs[d]
	Scenario 1	***Scenario 2***	***Scenario 3***	***Scenario 4***	***Scenario 5***	***Scenario 6***
High-income[e] countries	0.20	0.17	0.05	0.13	0.25	0.27
Middle-income countries	0.09	0.09	-0.01	0.01	0.15	0.15
Low-incomes countries	0.05	0.04	0.01	0.00	0.18	0.24
TOTAL WORLD	**0.17**	**0.15**	**0.04**	**0.10**	**0.22**	**0.24**
(and in $billion)	*73.4*	*65.1*	*16.7*	*43.0*	*94.9*	*103.9*

[a] Elimination of agricultural export subsidies and cuts in actual domestic support as of 2001 of 28 percent in the US, 18 percent in the EU, and 16 percent in Norway.

[b] In Scenarios 1 and 2 the applied global average tariff on agricultural products is cut by one-third, with larger cuts in developed countries, smaller in developing countries, and zero in least developed countries. In Scenario 1 there are three tiers for developed countries and four for developing countries, following Harbinson (WTO 2003) but 10 percentage points higher.

[c] Non-agricultural market access (NAMA) is expanded by a 50 percent tariff cut for developed countries, 33 percent for developing countries, and zero in least developed countries.

[d] Developing and least developed countries cut all agricultural and non-agricultural tariffs as much as developed countries.

[e] High-income countries (HICs) include the newly industrialized East Asian customs territories of Hong Kong, Korea, Singapore and Taiwan as well as Europe's transition economies that joined the EU in April 2004.

Source: Anderson, Martin and van der Mensbrugghe (2005a, Tables 12.9 and 12.10)

Table 7: Dollar change in real income in alternative Doha scenarios, 2015

(change in real income in 2015 in 2001 $billion compared to baseline scenario)

	Scen. 1	Scen. 2	Scen. 3	Scen. 4	Scen. 5	Scen. 6
Australia & New Zealand	2.3	2.5	1.5	1.4	2.7	2.9
EU 25 plus EFTA	30.1	28.7	11.2	11.3	31.9	35.3
United States	1.7	2.2	1.3	0.9	3.7	4.8
Canada	1.9	1.7	0.9	0.9	1.5	1.4
Japan	18.3	14.5	0.8	12.4	23.2	24.6
Korea and Taiwan	10.8	7.2	1.6	15.8	15.0	15.7
Hong Kong and Singapore	-0.1	-0.1	-0.2	-0.2	1.5	2.1
Argentina	1.4	1.5	1.2	1.2	1.5	1.6
Bangladesh	-0.1	-0.1	0.0	0.0	-0.1	-0.1
Brazil	3.4	3.3	1.2	1.2	3.7	3.8
China	-0.7	-0.6	-1.7	-1.3	1.5	-0.2
India	0.3	0.2	0.3	0.2	2.3	3.2
Indonesia	0.1	0.2	0.2	0.0	1.0	1.1
Thailand	0.9	1.0	0.8	0.8	2.1	2.5
Vietnam	-0.1	-0.1	-0.1	-0.1	-0.5	-0.5
Russia	-0.3	-0.1	-0.7	-0.7	0.9	1.2
Mexico	-0.4	-0.3	-0.4	-0.5	-1.1	-0.5
South Africa	0.1	0.1	0.2	0.3	0.4	0.6
Turkey	0.6	0.5	0.0	0.0	0.6	0.8
Rest of South Asia	0.2	0.2	0.1	0.2	0.3	0.3
Rest of East Asia	-0.1	0.0	-0.1	0.9	0.1	-0.1
Rest of Latin America & the Carib.	3.7	3.6	0.6	0.4	3.9	3.9
Rest of E. Europe and Central Asia	-0.1	-0.1	-0.2	-0.2	-0.6	-0.8
Middle East and North Africa	-1.2	-1.3	-1.6	-1.6	-1.0	-0.4
Other Southern Africa	0.1	0.1	0.0	0.0	0.1	0.1
Rest of Sub-Saharan Africa	0.0	0.0	-0.4	-0.4	-0.1	-0.1
Rest of the World	0.4	0.3	0.0	0.0	0.6	0.6
High-income countries	**65.0**	**56.6**	**17.1**	**42.6**	**79.4**	**86.7**
Developing countries	**8.3**	**8.5**	**-0.4**	**0.5**	**15.5**	**17.2**
Middle-income countries	7.3	7.6	-0.6	0.4	11.9	12.5
Low-income countries	1.0	0.9	0.2	0.0	3.6	4.7
East Asia and Pacific	0.1	0.5	-0.7	0.3	4.1	2.9
South Asia	0.5	0.4	0.4	0.5	2.5	3.5
Eastern Europe and Central Asia	0.2	0.3	-0.9	-0.9	0.9	1.2
Middle East and North Africa	-1.2	-1.3	-1.6	-1.6	-1.0	-0.4
Sub-Saharan Africa	0.2	0.2	-0.2	-0.1	0.4	0.7
Latin America & the Caribbean	8.1	8.1	2.6	2.3	8.0	8.8
World total	**73.4**	**65.1**	**16.7**	**43.0**	**94.9**	**103.9**

Anderson, Martin and van der Mensbrugghe (2005a, Table 12.10)

Deleted: (change in real income in 2015 in 2001 $billion compared to baseline scenario)

Deleted: *Source*: Authors' World Bank LINKAGE model simulations

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Table 12.10: Percentage change in real income in alternative Doha scenarios¶
(change in real income in 2015 in percent compared to baseline scenario)

Table 8: Percentage change in real income in alternative Doha scenarios, 2015

(change in real income in 2015 in percent compared to baseline scenario)

	Scen. 1	Scen. 2	Scen. 3	Scen. 4	Scen. 5	Scen. 6
Australia & New Zealand	0.40	0.43	0.26	0.24	0.47	0.50
EU 25 plus EFTA	0.30	0.29	0.11	0.11	0.32	0.35
United States	0.01	0.02	0.01	0.01	0.03	0.03
Canada	0.21	0.19	0.10	0.10	0.16	0.16
Japan	0.37	0.29	0.02	0.25	0.47	0.49
Korea and Taiwan	0.85	0.57	0.13	1.25	1.18	1.24
Hong Kong and Singapore	-0.03	-0.03	-0.05	-0.04	0.34	0.48
Argentina	0.36	0.37	0.31	0.29	0.37	0.40
Bangladesh	-0.07	-0.07	-0.04	-0.04	-0.10	-0.08
Brazil	0.52	0.50	0.19	0.18	0.56	0.58
China	-0.03	-0.02	-0.06	-0.05	0.06	-0.01
India	0.03	0.03	0.04	0.03	0.26	0.36
Indonesia	0.05	0.08	0.09	0.01	0.36	0.41
Thailand	0.45	0.51	0.39	0.40	1.02	1.26
Vietnam	-0.19	-0.21	-0.09	-0.14	-0.83	-0.86
Russia	-0.06	-0.03	-0.15	-0.15	0.18	0.24
Mexico	-0.04	-0.04	-0.05	-0.06	-0.12	-0.06
South Africa	0.08	0.10	0.14	0.21	0.25	0.44
Turkey	0.25	0.21	0.02	0.02	0.26	0.31
Rest of South Asia	0.13	0.11	0.06	0.14	0.17	0.19
Rest of East Asia	-0.04	-0.01	-0.02	0.30	0.04	-0.02
Rest of Latin America & the Carib.	0.44	0.43	0.07	0.05	0.46	0.47
Rest of E. Europe and Central Asia	-0.05	-0.05	-0.07	-0.07	-0.21	-0.27
Middle East and North Africa	-0.10	-0.11	-0.13	-0.13	-0.08	-0.04
Other Southern Africa	0.21	0.19	-0.03	-0.05	0.19	0.21
Rest of Sub-Saharan Africa	-0.01	-0.02	-0.17	-0.17	-0.05	-0.03
Rest of the World	0.20	0.15	0.00	0.02	0.26	0.27
High-income countries	**0.20**	**0.17**	**0.05**	**0.13**	**0.25**	**0.27**
Developing countries	**0.08**	**0.08**	**0.00**	**0.00**	**0.15**	**0.17**
Middle-income countries	0.09	0.09	-0.01	0.01	0.15	0.15
Low-income countries	0.05	0.04	0.01	0.00	0.18	0.24
East Asia and Pacific	0.00	0.01	-0.02	0.01	0.12	0.09
South Asia	0.04	0.03	0.03	0.04	0.22	0.30
Eastern Europe and Central Asia	0.02	0.03	-0.09	-0.08	0.09	0.12
Middle East and North Africa	-0.10	-0.11	-0.13	-0.13	-0.08	-0.04
Sub-Saharan Africa	0.05	0.05	-0.04	-0.02	0.09	0.17
Latin America & the Caribbean	0.29	0.29	0.09	0.08	0.29	0.32
World total	**0.17**	**0.15**	**0.04**	**0.10**	**0.22**	**0.24**

Anderson, Martin and van der Mensbrugghe (2005a, Table 12.10)

Table 9: Effects on bilateral merchandise trade flows of adding non-agricultural tariff cuts to agricultural reform under Doha, 2015

(2001 $billion (and percent) increase over the baseline in 2015)

	Propn'l agric reform only[a]		Agric plus non-agric reform[b]	
Exports to:	High-income[c] countries	Developing countries	High-income[c] countries	Developing countries
Exports from :				
High-income[c] countries	16	5	76	48
(% increase)	*0.7*	*0.3*	*3.4*	*2.6*
Developing countries	14	2	65	14
(% increase)	*0.6*	*0.2*	*2.9*	*1.6*
TOTAL WORLD	**29**	**7**	**141**	**62**

[a] Scenario 2 in Table 6

[b] Scenario 5 in Table 6

[e] High-income countries include the newly industrialized East Asian customs territories of Hong Kong, Korea, Singapore and Taiwan as well as Europe's transition economies that joined the EU in April 2004.

Source: Anderson, Martin and van der Mensbrugghe (2005a, Table 12.14)

Table 10: Effects of a comprehensive Doha reform on agricultural output and employment growth, by region, 2005 to 2015

(annual average growth rate, percent)

	Output		Employment	
	Baseline	Scenario 5[b]	Baseline	Scenario 5[b]
Australia and New Zealand	3.5	4.4	0.4	1.1
Canada	3.5	4.3	0.2	1.0
United States	2.2	1.7	-0.8	-1.4
EU 25 plus EFTA	1.0	-0.4	-1.8	-2.8
Japan	0.5	-1.4	-2.7	-4.1
Korea and Taiwan	2.2	1.6	-1.3	-2.1
Argentina	2.9	3.6	0.9	1.6
Bangladesh	4.2	4.2	1.1	1.2
Brazil	3.3	4.4	1.1	2.2
China	4.3	4.3	0.8	0.8
India	4.3	4.4	1.0	1.0
Indonesia	3.0	3.0	-0.7	-0.6
Thailand	-0.1	0.4	-4.6	-4.3
Vietnam	5.8	5.9	3.9	4.0
Russia	1.5	1.4	-2.3	-2.3
Mexico	3.9	4.1	2.0	2.4
South Africa	2.5	2.7	0.0	0.1
Turkey	3.0	3.1	-0.5	-0.5
Rest of South Asia	4.8	4.9	2.0	2.1
Rest of East Asia	3.7	3.8	0.2	0.3
Rest of Latin America & Ca	4.4	5.3	1.9	2.7
Rest of E. Europe & C. Asia	3.3	3.4	0.0	0.1
Middle East & North Africa	4.0	4.1	1.5	1.6
Other Southern Africa	5.3	5.4	3.0	3.0
Rest of Sub-Saharan Africa	4.6	4.8	2.2	2.3
Rest of the World	5.0	5.5	2.4	2.8

Source: Anderson, Martin and van der Mensbrugghe (2005a, Tables 12.12 and 12.13)